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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/840,946	04/24/2001	Daniel J. Thuringer	00CR097/KE	5618

7590

07/22/2004

Rockwell Collins, Inc.
Attention: Kyle Eppele M/S 124-323
400 Collins Rd. NE
Cedar Rapids, IA 52498

EXAMINER

GOSHTASBI, JAMSHID

ART UNIT PAPER NUMBER

2631

DATE MAILED: 07/22/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/840,946

Applicant(s)

THURINGER, DANIEL J.

Examiner

Jamshid Goshtasbi-G.

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 April 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10, 14, 15 and 17-19 is/are rejected.
- 7) ☒ Claim(s) 11-13 and 16 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 April 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Claims 1-19 are pending in the application.

Claim Objections

2. Claim 16 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. **Claim 16** is improperly dependent on Claim 15 because "generating steps" of Claim 15 assume the existence of "negative and positive bipolar pulse peaks" within a mid-frequency region; therefore, the limitation "...peaks are outside a mid-frequency region" recited in Claim 15 contradicts (and not further limiting) the limitation recited in Claim 15.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 1-9 and 17-19 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 recites (in line 8) the limitation "said magnitude." There is insufficient antecedent basis for this limitation in the claim.

Claims 2-5, and 7 are rejected as being dependent upon the rejected base claim (Claim 1).

Claim 6 recites (in line 4) the limitation "said magnitude" in Claim 1. There is insufficient antecedent basis for this limitation in the claim. Also, Claim 6 recites (in line 6) the limitation "with said at least one cycle slip comparator..." There is insufficient antecedent basis for this limitation in the claim.

Claim 8 recites (in lines 3-5) the limitation "said positive comparator and said negative comparator ...in said bipolar pulse..." in Claim 1. There is insufficient antecedent basis for this limitation in the claim.

Claim 9 recites (in lines 14-18) the limitation "...in said bipolar pulse and if said bipolar pulse frequency..." in Claim 1. There is insufficient antecedent basis for this limitation in the claim.

Claim 17 recites (in line 1) the limitation "said cycle slip size" in Claim 15. There is insufficient antecedent basis for this limitation in the claim.

Claim 18 recites (in line 1) the limitation "said cycle slip size" in Claim 15. There is insufficient antecedent basis for this limitation in the claim.

Claim 19 recites (in line 2) the limitation "said compensated, ..." in Claim 15. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claim 10 is rejected under 35 U.S.C. 102(b) as being anticipated by US Patent No. 4015083 to Bellisio.

As to **Claim 10**, Bellisio shows a cycle slip detection method (arrangement) for detecting a cycle slip in a phase comparison circuit (phase detector of a phase-locked loop; col.5, lines 61-68 and col.7, lines 41-55), comprising the steps of filtering out (col. 3, lines 26-35) phase difference frequency components above a predetermined high frequency cut-off, and detecting a cycle slip (the output level produced by comparator 41 in Figure 1 (or 5)) in the filtered phase error when the magnitude (the input signal) exceeds a predetermined cycle slip threshold (value). See figures 1 and 5 and the corresponding discussions (col. 3, lines 3-25; col. 5, lines 61-68; col. 6, lines 2-3 and lines 12-26; col.7, lines 41-55).

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bellisio (US 4015083) in view of Grimes (US 4516250).

Claim 14 inherits the limitations of Claim 10; further, while disclosing comparators producing, at the slip rate, one output level when the input signal exceeds a predetermined threshold value another output level when the input signal is less than the predetermined threshold level, Bellisio, however, fails to teach the step of detecting a cycle slip detection; however, Grimes teaches a method for a cycle slip direction (and type) indicator (element 319 of figures 3 and 6; Claim 19(6) and Claim 22(7)) that generates a direction signal indicative of the direction of the last half of the full cycle slip (col. 5, lines 14-16). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teachings of Grimes into the method of Bellisio for producing the claimed invention because detecting a cycle slip direction would have helped to further improve the phase-locked loop in correcting the phase error (leading or lagging) with respect to the direction of the detected cycle slip.

9. Claims 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tateishi (US 5790613) in view of Bellisio (US 4015083) and Grimes (US 4516250).

Claim 15 inherits the limitations of Claim 10; further, Tateishi discloses a method for cycle slip detector comprising steps of detecting a positive bipolar pulse peak in a phase difference (error) and by determining (magnitude comparator) if the magnitude of the phase difference (value of a phase error signal) positively exceeds (is larger than) a predetermined positive cycle slip threshold; detecting a negative bipolar pulse peak in a phase difference (error) and by determining (magnitude comparator) if the magnitude of the phase difference (value of a phase error signal) negatively exceeds (is smaller than)

a predetermined negative cycle slip threshold (col. 2, lines 38-48); further, Tateishi teaches generating a cycle slip detecting signal when the (above) first determining signal and the second determining signal are generated in succession (col. 2, lines 49-51); Tateishi, but, fails to teach generating a positive (negative) cycle slip output if a positive (negative) bipolar pulse peak occurs before the negative (positive) bipolar pulse peak; and generating a positive (negative) cycle slip output if a positive (negative) bipolar pulse peak occurs first in the bipolar pulse and if the bipolar pulse frequency is within a predetermined mid-frequency; however Grimes teaches a method for a cycle slip direction (and type) indicator (element 319 of figures 3 and 6; Claim 19(6) and Claim 22(7)) that includes a process of slip detection that uses a positive coincidence detector and a negative coincidence detector (Figure 3) for generating a positive (negative) coincidence signal indicative of a concurrence between positive (negative) transitions of a first positive (negative) and a second positive (negative) pulse; further, Grimes teaches the method of generating a control signal indicating whether the positive (negative) coincidence occurred first; further, Bellisio's teaching of filtering a phase difference for cycle slip detection in a predetermined mid-frequency region was treated in the rejection of Claim 10 above; Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teachings of Grimes and Bellisio into the method of Tateishi for producing the claimed invention because a the determination of whether a positive cycle slip (leading drift) or negative cycle slip (lagging drift) has occurred in a filtered phase difference (in a

predetermined mid-frequency) could have been used to determine a cycle slip direction for further improving the quality of phase-locked loop.

Allowable Subject Matter

10. **Claims 11-13, 15, and 16-19** are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 11-13 are dependent on Claim 10.

Claim 15 is dependent on Claim 10.

Claims 16-19 are dependent on Claim 15.

11. Claim 1 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action.

12. Claims 2-5 and 7 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Conclusions

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. [Wolver], [Lanzafame et al.], and [Dulk] all teach the detection of

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an UP (positive) or Down (negative) cycle-slip as it relates to a leading or lagging slip and counting the number of occurred cycle slips.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jamshid Goshtasbi-G. whose telephone number is (703) 305-8976. The examiner can normally be reached on M-F 8:00/4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jay Patel can be reached on (703) 308-7728. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jamshid Goshtasbi-G.
Examiner
Art Unit 2637